ENCLOSURE 1

INTEGRATION IN THE DEPARTMENT OF DEFENSE (DoD)

1.0 DoD Integration Overview.

DoD-wide integration is comprised of explicit top management initiatives to ensure that interdependent functions or systems operate effectively and efficiently for the overall benefit of the Department. This contrasts with coordination among functions or systems, which ensures non-interference, but does not provide integration. "Integration" implies seamless, transparent operation based on a shared or commonly-derived architecture (functional or technical) and standard data. "Interoperability" implies only the ability of a function or system to exchange information or services with another, separate function or system using translators or interchange rules/standards.

DoD is moving through a period of profound change. The end of the cold war, a new agenda for the nation, new concepts for managing enterprises, and the revolution in information technology, challenge old assumptions and ways of doing business as never before. While we cannot foresee all the changes that will occur in defense, we can act now to shape the future, rather than be shaped by it. DoD must remain ready to protect our national interests from existing and emerging external threats while also responding to new national priorities.

DoD is evolving from its cold war posture to a smaller, more mobile and flexible force and infrastructure capable of projecting power anywhere in the world at a moments notice. The Department is positioning itself to engage in a much broader spectrum of missions, ranging from deterrence and regional conflict to peacekeeping and humanitarian assistance.

A new agenda has been established for the nation. Our industries must once again become world leaders in quality, productivity and value. They must create more and better jobs for Americans. Our education system must prepare our children for the 21st century workplace so we can continue to be competitive in the world market. Our infrastructure must be sustained and modernized. In order to achieve these national goals, our Government must be reinvented so it better serves the American People. DoD is a leader in the effort to renew, reinvigorate and improve Government.

The world is in the middle of a true revolution in how organizations are managed, how work is performed, and how people are made more productive. This revolution - a new paradigm - results from the ability to manage information through technology. The old organization structures of the past are rapidly giving way to "horizontal" enterprises that focus core competencies across functional lines and on interoperable mission results. In essence, the availability of accurate information, where and when it is needed, leverages human knowledge and innovation. It gives the warfighting commander an integrated picture of the battlespace, so he/she can control the pace and outcome of battle. It gives the manager critical insight into current performance and best practice, so processes can be eliminated, improved and reengineered. It creates a new, more responsive and cost-effective relationship between DoD and industry through the application of enabling technologies such as Continuous Acquisition and Life-Cycle Support (CALS) and Electronic Commerce/Electronic Data Interchange (EC/EDI). The challenge is to harness this "information revolution" and to continually use information technology as a force multiplier vice a force divider.

DoD has established a strategic, collaborative management initiative to guide the evolution of the DoD enterprise and capture the benefits of the information revolution. This integration initiative represents a partnership of functional and technical management to achieve a combination of improved business processes and effective application of information technology across DoD's functional areas. It is embodied in policies and programs, implementation guidance, and supporting resources to help functional managers guide and implement changes to processes, data, and systems across the Department. DoD-wide integration is sometimes thought to embody only the func-

tional and technical integration of an organization's information systems. But total integration is not limited to the alignment of an organization's information resources. Rather, it comprises:

- Shared strategic direction for the organization itself, consistently deployed at all levels;
- The integration of both internal functional organizations and external partners and suppliers;
- The integration of "end-to-end" processes that cross functional and organizational boundaries;
- The establishment of a cooperative culture throughout the organization and the empowerment of people;
- The standardization of data and the sharing of corporate information through a common information infrastructure; and
- The integration of an organization's physical assets to ensure a flexible and adaptive physical infrastructure.

DoD-wide integration is a systematic process for removing functional and technical barriers within an organization, and leveraging all available capabilities to achieve an organization's objectives. DoD-wide integration provides the strategies and solutions for end-to-end functional processes, shared data, and common or interoperable information systems that result in the highest degree of mission effectiveness and resource efficiency.

But DoD-wide integration also encourages a broader concept of the enterprise; indeed, it underscores the importance of a "global view." By establishing functional integration and technical interoperability with non-DoD agencies and the private sector, DoD can leverage the integration process to achieve even greater efficiencies and national level effectiveness.

2.0 The Requirement for Integration.

2.1 The National Military Strategy (NMS). The NMS of flexible and selective engagement prescribes a selective employment of military capabilities in peace and the use of decisive military force in war to achieve our national military objectives in the new international environment as shown in Figure E.1-1.

Figure E.1-1 - National Military Strategy

The NMS relies on power projection by highly flexible, rapid response, tailored force packages under Joint Task Force (JTF) or Combined Task Force (CTF) command. These force packages will support a spectrum of military and political responses to promote national interests worldwide. The NMS dictates that U.S. forces be structured to project power from Continental United States (CONUS) bases, sanctuary locations and in-theater locations to an area of conflict anywhere in the world. The environment of future military operations includes:

- Regional orientation
- Uncertain, unknown threats
- Ad-hoc coalitions and/or unilateral operations
- Adaptive planning and strategic agility
- Smaller total force - reduced forward presence
- Rapid response capability
- Operations other than warfighting (e.g., peacekeeping, sanctuary, etc.)
- Variable foreign infrastructure sophistication; uncertain access
- Tailored force packages deployed under JTF or CTF command
- Reduced funding

The NMS states that interactive information sharing is key to modern battlefield success (Figure E.1-2) and that, "The remarkable leverage attainable from modern reconnaissance, intelligence collection and analysis and high-speed data processing and transmission warrants special emphasis. The Services and combatant commands require fused information systems. These systems enhance our ability to dominate warfare. We must assure that this leverage works for us and against our adversaries."

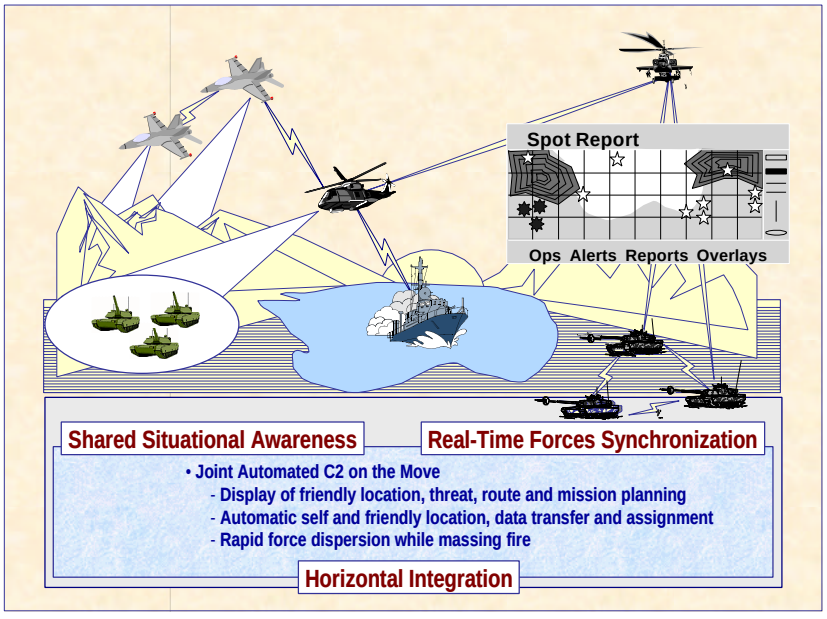

Figure E.1-2 - Common View of the Battlespace

2.2 Command, Control, Communications, Computer and Intelligence for the Warrior (C^4IFTW). The new Warfighting context outlined in the NMS drives the evolution of a concept to guide all the Services toward a global C^4I "Infosphere." The vision of C4IFTW is to create a single view of joint military C^4I, as shown in Figure E1-3. This view is of a widely distributed user-driven infrastructure to which the warrior "plugs in." The three disciplines critical to the Warfighter are Command and Control (C^2), Intelligence and Mission Support. This information for the Warfighter -- whether in the air, on land, at sea, or in space - must be accessible through integrated computer and communications systems in a secure and seamless manner among the Services and Agencies. The global information infrastructure must respond quickly to new joint, coalition and organizational relationships created on demand. Senior decision makers will continue to require accurate, immediate, reliable information to maintain a safe, credible, global deterrent against the use of weapons of mass destruction.

Figure E.1-3 - C^4IFTW Vision

The information infrastructure must respond quickly to new joint, coalition, and organizational relationships created on demand. Key information systems capabilities needed to respond to the deployed Warfighter include split base/reach back, same "look and feel," and tailored C^4I information.

The vision of C^4IFTW is to provide the Warrior a fused, real-time, true representation of the three-dimensional battle space and the ability to coordinate in all directions. The key information systems capabilities needed to respond to the deployed Warfighter include:

- Split Base/Reach Back. The ability of the Warfighters and battle staff to deploy to the battle space and to supplement the Warfighters' limited mission support staff (e.g., communications, logistics) with forces in CONUS "deployed" to the battle space by electronic means.
- Same "Look and Feel." The information systems used by Warfighters in garrison and in the battle space will appear identical.
- Tailored C^4I Information. The Warfighter chooses the types of critical information to be pushed forward and has the freedom to pull other needed information when and where it is needed. Real-time bat-

tlespace information is the result of fusing Preplanned Essential Elements of Information (P2E2I), over-the-air updating (OTAU) and warrior pull on demand.

The C^{4}IFTW vision in turn drives the evolution of the DII.

> ***The National Military Strategy dictates that U.S. forces be structured to project power from CONUS, sanctuary locations, and in-theater locations to an area of conflict anywhere in the world.***

2.3 Related DoD Strategy and Planning Documents. The vision driving C^{4}IFTW and the DII is derived from high-level policy and vision statements outlined in the National Security Strategy, the NMS, the Joint Planning Document, and the Defense Planning Guidance. The Commanders-in-Chief (CINC), Services, Agencies and Functional planning activities are derived from these overarching DoD requirements documents. The DII will evolve to meet these requirements by providing an integrated global information environment. This hierarchy of planning activities is shown in Figure E.1-4.

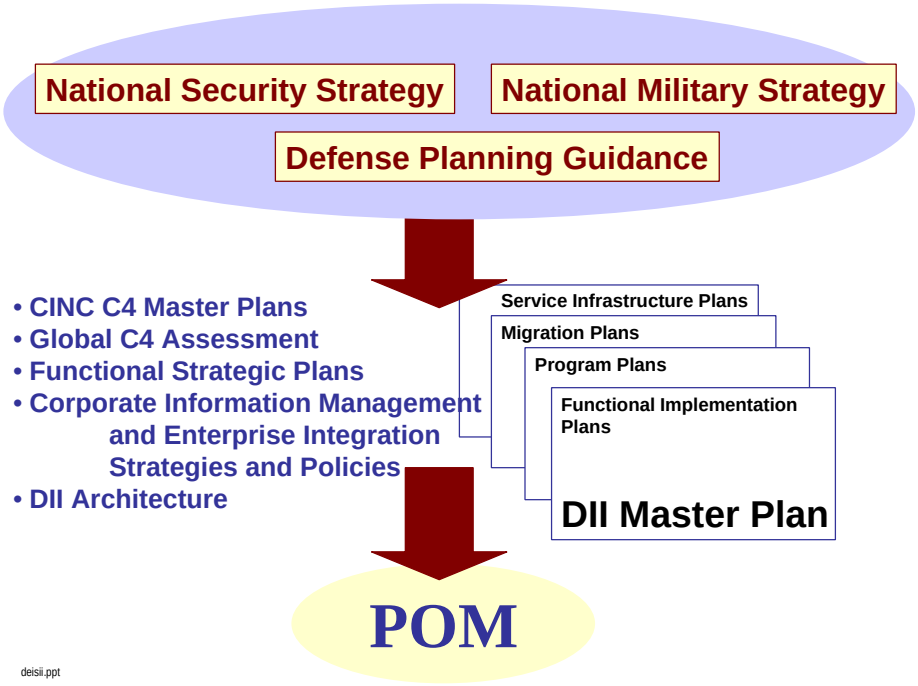

Figure E.1-4 - Overview of DoD Information Management Planning

2.3.1 The Defense Information Infrastructure (DII) Master Plan. The DII Master Plan is a tool to manage the evolution of the DII by providing guidance to, and receiving feedback from, baseline operations, migration initiatives, and DII architecture development. In turn, these activities provide input to the DoD-wide integration and prototyping activities.

> ***The DII Master Plan is a tool for managing the DII evolution.***

The descriptive and analytical data for the DII are available at several levels of detail. The DII Master Plan contains an overview of the DII elements, as shown in Figure E.1-5, including description and strategy for achieving DII goals, and of the DII integration implementation concept. The DII Master Plan also contains a greater level of detail on

each DII element that support high-level analysis of interdependencies. DII planners and implementors, throughout DoD, are able to access DII data at the proper level efficiently and effectively. The purposes of the Master Plan are to:

- Establish the common vision of the DII for the DoD to ensure unity of effort
- Provide information about the DII and DII initiatives for use by customers, planners, program managers, action officers, and policy makers in developing the elements of the DII
- Define the roles, responsibilities and relationships of all DII participants
- Identify the elements that compose the DII
- Provide a road map for the migration and implementation of DII elements
- Identify the relationships and interdependencies of DII initiatives
- Assist in integrated planning and implementation of DII efforts across DoD to ensure that the right resources are programmed to do the right things, at the right time, by the right organizations
- Establish standard definitions and a lexicon/glossary of DII terminology
- Describe initiatives that eliminate the shortfalls in the current information infrastructure

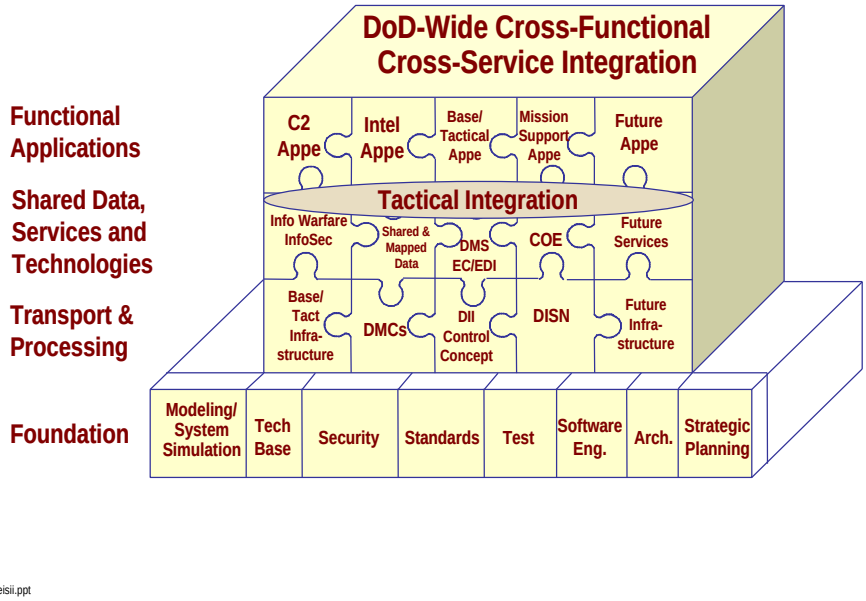

Figure E.1-5 - Elements of the DII

2.3.2 Functional Strategic Plans. These plans are developed by the Office of the Secretary of Defense (OSD) Principal Staff Assistants (PSAs) in response to the NMS to identify long-term functional area goals. Based on the Functional Strategic Plans, the PSAs task the functional community to develop functional implementation plans which provide capabilities to the Warfighters' mission support forces and all of DoD. These plans result in the acquisition, installation, and consolidation of DII elements under the control of the PSA and the responsible Service/Agency in accordance with DoD-wide integration strategies and policy. The resulting systems are implemented in consonance with the DII Architecture.

2.3.3 The Command and Control Functional Analysis and Consolidation Review Panel Report (C^2FACREP) - OCT 1991. This pivotal study requested by the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD(C^3I)), was conducted by the Joint Staff, and approved by the Chairman of the Joint Chiefs of

Staff (JCS). Many of its recommendations are incorporated in the C4IFTW concept, the Joint Planning Document, and the Defense Planning Guidance. It recommends establishment of a consolidated global Command and Control (C^2) information system using existing facilities to: (1) provide information and processing resources to deployed forces; (2) provide logistics and other functional support from CONUS bases; (3) provide common information formats, displays, interfaces and procedures to allow direct horizontal communications among C/JTF Components; and (4) provide these services securely to Commanders in all regions.

2.3.4 Joint Planning Document and the Defense Planning Guidance (DPG). These strategic planning documents are used by the Chairman of the JCS and the Secretary of Defense respectively to provide guidance to the Military Services and Agencies in building their long-term plans. In the area of DII, both call for consolidating redundant functions, increasing overall system throughput, and merging existing stovepipe systems to achieve interoperability and enable joint tactical commanders to control component forces. The DPG (draft) states: "One of the Department's critical goals is to create an interoperable system of systems geared toward enhanced C4. The DII will combine facilities, communications networks, computer databases, and the software applications needed to process and transport information to users anywhere in the world."

2.3.5 Joint Strategic Capabilities Plan (JSCP). The JSCP provides guidance to the CINCs and the JCS to accomplish tasks and missions based on current military capabilities. The JSCP apportions resources to CINCs, based on military capabilities resulting from completed programs and budget actions and intelligence assessments. The JSCP is the principal vehicle by which the CINCs are tasked to develop operations plans (OPLANs), concept plans (CONPLANs), and Functional Plans for regional contingencies. One volume of the JSCP apportions DII capabilities to the CINCs and is used by the CINC's J6 Directorate for Command, Control, Communications & Computer Systems in aligning C^4I and functional information system capabilities with the CINC OPLANs.

2.3.6 CINC C^4 Master Plans. These plans are developed by the CINC staffs in response to national military objectives to identify long-term command, control, communications and computer (C^4) goals and assess current and mid-term C^4 capabilities. The CINC C^4 System Master Plans provide information and guidance for planning operations developing OPLANS and CONPLANS and integrate existing C^4 architectures to meet current and mid-term goals. The acquisition or development of information systems to provide these capabilities by the Services and Agencies is in accordance with DoD-wide integration strategies. The systems and architectures are in consonance with and impact upon the DII Architecture.

2.3.7 The Global Command, Control, Communications and Computer Assessment (GC^4A). The GC^4A is produced annually by the Director for C^4 Systems, Joint Staff (J-6E) based on inputs for the CINC Master Plans and Assessments. The GC4A provides a high-level assessment of C^4IFTW/ DII capabilities based on warfighting requirements. The GC4A drives adjustments to the Service and Agency Infrastructure plans and the DII Master Plan.

2.3.8 Implementation Plan for Global Combat Support System (GCSS) Initiative. The GCSS is a demand driven, joint Warfighter focused initiative to accelerate delivery of improved combat support capabilities, as well as interface and integrate DoD-wide Service/Agency sponsored Combat Support Systems. GCSS will use an evolutionary approach to maintain the flexibility required as both missions and technology change. The primary focus of GCSS is the integration of mainline commercial products (MLCP) and commercially available information technology services with functional applications and databases. It will enable improved combat support capabilities by defining, integrating and selectively fielding critical combat support elements of the DII for the Warfighter. Figure E.1-6 depicts the target GCSS environment. It includes mission support applications and shared databases that are integrated through a common structure.

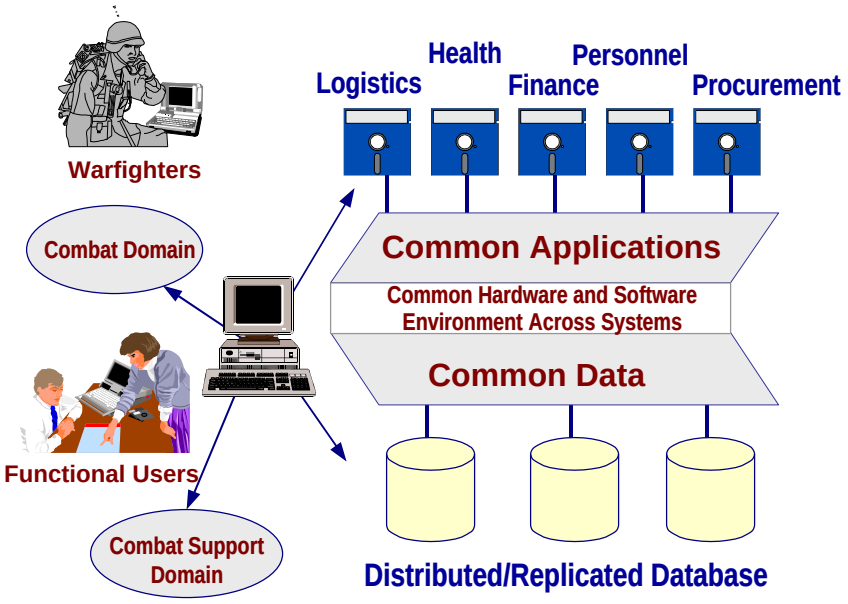

Figure E.1-6 - Target GCSS Environment

The success of GCSS depends on achieving results that strengthen combat and combat support mission performance. GCSS will make available to the Joint Warfighter the necessary information to ensure that combat activities will be successful through effective preparation, support and sustainment. GCSS will strengthen combat support to the Joint Warfighter by providing an information infrastructure that has the flexibility needed to respond to evolving changes in mission, policy, and doctrine. This will be delivered through the GCSS by:

- Providing Reach Back to combat support capabilities and personnel that remain in garrison.
- Providing a combat support infrastructure that is responsive to mission support needs and more agile, with a much shorter time to adapt to required changes.
- Providing a flexible and adaptive open computing environment.
- Enabling interoperability and integration across combat support areas and from combat support to the combat environments.
- Integrating and implementing an information infrastructure that provides end-to-end information connectivity and access.

2.3.9 Service Strategies. The Services have developed supporting concepts and strategies for normal and contingency operations, with particular emphasis on the requirements for split base/reach back capabilities. These supporting visions include:

- **Navy's Copernicus Architecture.** Establishes a Navy C^4I architecture for the Space and Electronic Warfare mission, where the tactical commander is the center for controlling information flow to support his mission execution. This user-centered approach provides the tactical commander control through information-pull rather than producer-push. Four pillars of an interactive framework tie together the command and control process of the Navy tactical commander afloat, the Joint Task Force (JTF), the numbered fleet commander, and others with the CINC ashore: (1) Global Information Exchange Sys-

tem; (2) CINC Command Complex; (3) Tactical Data Information Exchange Systems; and (4) Tactical Command Center.

- **Army's Enterprise Strategy.** Provides a view of the information needs of the Army as a whole: As a fighting force, a component of a joint or combined force, the support and sustainment of that force, and the organizational, business and administrative structure that supports all aspects of the Army. The Enterprise vision will enhance Information Mission Area (IMA) and non-IMA community understanding. The implementation plan will provide guidance to the IMA community as well as help influence the programming phase of the Planning, Programming and Budgeting System.

- **U.S. Air Force Horizon Strategy.** Provides the warfighter with responsible advanced C^4I systems services. It will provide reliable, cost-effective, mission-, and user-focused C^4I systems. It supports the Joint staff C^4IFTW concept which emphasizes joint interoperability objectives, derived from joint operational requirements.